IN THE CLAIMS:

Claims 1 through 6 are pending is this application. New claims 7 through 76 are now added.

1   1.   (Original) An optical sensing assembly for a computer input device

2 configured to receive power from a self-contained power source, the optical sensing

3 assembly for characterizing movement relative to the optical sensing assembly and

4 comprising:

5   a photo-sensitive element configured to receive reflected light from a light source

6   to produce a first image data associated with a first image and a second

7   image data associated with a second image;

8   an image data processing logic coupled to the photo-sensitive element for

9   receiving the image data and configured to determine image difference

10   data from differences between the first image data and the second image

11   data; and

12   a power control logic operatively coupled to the image data processing logic and

13   configured to implement a native power control mode wherein an internal

14   algorithm changes the power consumption of the optical sensing assembly

15   from a full power mode to one or more lower power modes based on the

16   image difference data.

1   2.   (Original) The optical sensing assembly of claim 1, wherein the photo-

2 sensitive element is one of a CCD array or a photo diode.

1   3.   (Original) The optical sensing assembly of claim 2, wherein the photo-

2 sensitive element is a CCD array having a set of pixels and the image data comprises a bit

3 vector corresponding to a set of states of the set of pixels.

1   4.   (Original) The optical sensing assembly of claim 1, further comprising a

2 focusing lens coupled to the photo-sensitive element for focusing the reflected light to the

3 photo-sensitive element.

1   5.   (Original) The optical sensing assembly of claim 1, wherein the image

2 data processing logic is further configured to translate the image difference data to one of

3 position data or displacement distance data.

1   6.   (Original) A method for detecting movement with a photo sensing device

2 configured to receive power from a self-contained power source, the method comprising:

3   receiving reflected light from a light source to produce a first image data associated

4   with a first image and a second image data associated with a second image;

5   determining image difference data from differences between the first image data and

6   the second image data; and

7   implementing a native power control mode wherein an internal algorithm changes the

8   power consumption of the photo-sensing device from a full power mode to

9   one or more lower power modes based on the image difference data.

1 7.   (New) A method of managing power consumption of a wireless device having a

2 plurality of power consumption modes, the method comprising:

3 in a first power consumption mode:

4   operating the wireless device at a first power level,

5   in response to receiving a first activity data, maintaining the first power

6   consumption mode, and

7   in response to receiving no activity data for a time period associated with the

8   first power consumption mode, transitioning to a second power

9   consumption mode;

10   in the second power consumption mode:

11   operating the wireless device at a second power level that is less than the first

12   power level,

13   in response to receiving a second activity data, transitioning to the first power

14   consumption mode, and

15   in response to receiving no second activity data for a time period associated

16   with the second power consumption mode, transitioning to a third

17   power consumption mode; and

18   in the third power consumption mode:

19   operating the wireless device at a third power level that is less than the second

20   power level, and

21   in response to receiving a third activity data, transitioning to the first power

22   consumption mode.

1   8.   (New) The method of claim 7, wherein the second activity data comprises motion

2   detection.

1   9.   (New) The method of claim 8, wherein the motion detection is determined through a

2   comparison of images on a photosensor.

1 ·10.   (New) The method of claim 7, wherein the third activity data comprises motion

2   detection.

1 11.   (New) The method of claim 10, wherein the motion detection is determined through

2   a comparison of an image on a photosensor.

1 12.   (New) The method of claim 10, wherein the motion detection is determined through

2   a change of pixel on a photosensor.

1 13.   (New) The method of claim 7, wherein the first activity data is derived through

2   interferometric techniques.

1 14.   (New) The method of claim 7, wherein the third activity data is derived through user

2   input.

1 15.   (New) The method of claim 14, wherein the user input comprises selecting a button

2   on the wireless device.

1 16.   (New) The method of claim 14, wherein the user input comprises turning a wheel on

2   the wireless device.

1 17.   (New) The method of claim 7, wherein the third power consumption mode further

2   comprises, in response to receiving no third activity data, maintaining the third power

3   consumption mode.

1 18.   (New) The method of claim 7, wherein the third power consumption mode further

2   comprises, in response to receiving no third activity data for a period of time

3   associated with the third power consumption mode, transitioning to a fourth power

4   consumption mode.

1   19.   (New) The method of claim 7, wherein the wireless device comprises a plurality of

2   power consuming modules, and wherein the second power consumption mode further

3   comprises powering down one of the plurality of the power consuming modules.

1   20.   (New) The method of claim 19, wherein the third power consumption mode further

2   comprises powering down a second power consuming module.

1   21.   (New) The method of claim 19, wherein powering down comprises decreasing

2   power.

1   22.   (New) The method of claim 19, wherein powering down comprises shutting off

2   power.

1   23.   (New) The method of claim 7, wherein the wireless device comprises one from a

2   group consisting of a mobile phone, a text messager, and a personal digital assistant.

1   24.   (New) A method of managing power consumption of a wireless device having a

2   plurality of power consumption modes, the method comprising:

3   in a first power consumption mode:

4   querying for a first activity data at a first average polling rate,

5   in response to receiving the first activity data, maintaining the first power

6   consumption mode, and

7   in response to receiving no first activity data for a time period associated with

8   the first power consumption mode, transitioning to a second power

9   consumption mode;

10   in the second power consumption mode:

11   querying for a second activity data at a second average polling rate that is

12   lower than the first average polling rate,

13   in response to receiving the second activity data, transitioning to the first

14   power consumption mode, and

15   in response to receiving no second activity data for a time period associated

16   with the second power consumption mode, transitioning to a third

17   power consumption mode; and

18   in the third power consumption mode:

19   querying for a third activity data at a third average polling rate that is lower

20   than the second average polling rate, and

21   in response to receiving the third activity data, transitioning to the first power

22   consumption mode.

1 25. (New) The method of claim 24, wherein querying for the first activity data comprises

2 capturing a single image during each poll at the first average polling rate.

1 26. (New) The method of claim 24, wherein querying for the first activity data comprises

2 capturing a plurality of images during each poll at the first average polling rate.

1 27. (New) The method of claim 24, wherein querying for the second activity data

2 comprises capturing a single image during each poll at the second average polling

3 rate.

1 28. (New) The method of claim 27, wherein querying for the second activity data

2 comprises capturing a plurality of images during each poll at the second average

3 polling rate.

1 29. (New) The method of claim 24, wherein querying for the third activity data

2 comprises capturing a single image during each poll at the third average polling rate.

30. (New) The method of claim 29, wherein querying for the third activity data comprises capturing a plurality of images during each poll at the third average polling rate.

31. (New) The method of claim 24, wherein the second power consumption mode further comprises:

capturing a single image during a single poll; and

comparing the captured image to a previously captured image from a previous poll.

32. (New) The method of claim 24, wherein the second power consumption mode further comprises:

capturing a plurality of images during a single poll; and

comparing one of the plurality of captured images to another one of the plurality of captured images.

33. (New) The method of claim 24, wherein the third power consumption mode further comrprises:

capturing, during a single poll, a single image comprising of a plurality of pixels, each pixel having a value; and

detecting changes in the values of the plurality of pixels in the captured image from the values of a plurality of pixels in a previously captured image from a previous poll.

34. (New) The method of claim 24, wherein the third power consumption mode further comprises:

capturing, during a single poll, a plurality of images, each of the plurality of images comprising of a plurality of pixels, each pixel having a value; and

5   detecting changes in the values of the plurality of pixels in one of the plurality of

6   captured images from the values of the plurality of pixels in another one of the

7   plurality of captured images.

1   35.   (New) The method of claim 24, wherein the second activity data corresponds to

2   motion detection.

1   36.   (New) The method of claim 35, wherein the motion detection is determined through

2   a comparison of images on a photosensor.

1   37.   (New) The method of claim 36, wherein the comparison of images comprises

2   detecting pixel changes on the photosensor.

1   38.   (New) The method of claim 24, wherein the third activity data corresponds to motion

2   detection.

1   39.   (New) The method of claim 38, wherein the motion detection is determined through

2   a comparison of images on a photosensor.

1   40.   (New) The method of claim 39, wherein the comparison of images comprises

2   detecting a change of a pixel on the photosensor.

1   41.   (New) The method of claim 40, wherein the first activity data is obtained by

2   interferometric techniques.

1   42.   (New) The method of claim 24, wherein the first activity data is derived through

2   interferometric techniques.

1   43.   (New) The method of claim 24, wherein first activity data corresponds to user input.

1   44.   (New) The method of claim 24, wherein the user input comprises one from a group

2   consisting of a selection of a button or a turn of a wheel on the wireless device.

1 45. (New) The method of claim 24, wherein the third power consumption mode

2   comprises, in response to receiving no third activity data, maintaining the third power

3   consumption mode.

1 46. (New) The method of claim 24, wherein the third power consumption mode

2   comprises, in response to receiving no third activity data for a period of time

3   associated with the third power consumption mode, transitioning to a fourth power

4   consumption mode.

1 47. (New) The method of claim 46, wherein the wireless device comprises a plurality of

2   power consuming modules, and wherein the second power consumption mode further

3   comprises powering down one of the plurality of the power consuming modules.

1 48. (New) The method of claim 47, wherein the third power consumption mode further

2   comprises powering down a second power consuming module.

1 49. (New) The method of claim 47, wherein powering down comprises decreasing

2   power.

1 50. (New) The method of claim 47, wherein powering down comprises shutting off

2   power.

1 51. (New) The method of claim 24, wherein the wireless device comprises one from a

2   group consisting of a mobile phone, a text messager, and a personal digital assistant.

1 52. (New) A method of managing power consumption of a wireless device having a

2   plurality of power consumption modes, the method comprising:

3   in a first power consumption mode:

4   operating the wireless device at a first power level,

5   in response to receiving first activity data, maintaining the first power

6   consumption mode, and

7   in response to receiving no activity data for a time period associated with the

8   first power consumption mode, transitioning to a second power

9   consumption mode;

10   in the second power consumption mode:

11   operating the wireless device at second power level that is less than the first

12   power level,

13   in response to receiving a second activity data, transitioning to the first power

14   consumption mode, and

15   in response to receiving no second activity data for a time period associated

16   with the second power consumption mode, transitioning to a third

17   power consumption mode; and

18   in the third power consumption mode:

19   operating the wireless device at a third power level that is less than the second

20   power level, and

21   in response to receiving third activity data, transitioning to the second power

22   consumption mode.

1   53.   (New) The method of claim 52, wherein the first activity data comprises motion

2   detection.

1   54.   (New) The method of claim 53, wherein the motion detection is determined from a

2   comparison of an image on a photosensor.

1   55.   (New) The method of claim 52, wherein the second activity data comprises motion

2   detection.

1   56.   (New) The method of claim 55, wherein the motion detection is determined from a

2   comparison of images on a photosensor.

1   57.   (New) The method of claim 55, wherein the motion detection is determined from a

2   change of a pixel of a photosensor.

1   58.   (New) The method of claim 52, wherein the first activity data is derived through

2   interferometric techniques.

1   59.   (New) The method of claim 52, wherein the first activity data is derived through user

2   input.

1   60.   (New) The method of claim 59, wherein the user input comprises selecting a button

2   on the wireless device.

1   61.   (New) The method of claim 59, wherein the user input comprises turning a wheel on

2   the wireless device.

1   62.   (New) The method of claim 52, wherein the third power consumption mode further

2   comprises, in response to receiving no third activity data, maintaining the third power

3   consumption mode.

1   63.   (New) The method of claim 52, wherein the third power consumption mode further

2   comprises, in response to receiving no third activity data for a period of time

3   associated with the third power consumption mode, transitioning to a fourth power

4   consumption mode.

1   64.   (New) The method of claim 52, wherein the wireless device comprises a plurality of

2   power consuming modules, and wherein the second power consumption mode further

3   comprises powering down one of the plurality of the power consuming modules.

1   65.   (New) The method of claim 64, wherein the third power consumption mode further

2   comprises powering down a second power consuming module.

1   66.   (New) The method of claim 64, wherein powering down comprises decreasing

2   power.

1   67.   (New) The method of claim 64, wherein powering down comprises shutting off

2   power.

1   68.   (New) The method of claim 52, wherein the wireless device comprises one from a

2   group consisting of a mobile phone, a text messager, and a personal digital assistant.

1   69.   (New) A method of managing power consumption of a wireless device, the wireless

2   device having a first power consumption mode, a second power consumption mode,

3   and a third power consumption mode, the method comprising:

4   querying for first activity data in the first power consumption mode;

5   in response to receiving no first activity data, maintaining the first power

6   consumption mode;

7   in response to receiving the first activity data, transitioning to the second

8   power consumption mode, wherein the second power consumption mode consumes

9   more power than the first power consumption mode;

10   querying for second activity data in the second power consumption mode;

11   in response to receiving no second activity data, maintaining the second power

12   consumption mode; and

13   in response to receiving the second activity data, transitioning to the third power

14   consumption mode, wherein the third power consumption mode consumes

15   more power than the second power consumption mode.

1   70.   (New) The method of claim 69, wherein the first activity data comprises a user input.

1   71.   (New) The method of claim 69, wherein the first activity data comprises motion

2   detection.

1   72.   (New) The method of claim 69, wherein the second activity data comprises a user

2   input.

1   73.   (New) The method of claim 69, wherein the second activity data comprises motion

2   detection.

1   74.   (New) The method of claim 73, wherein the motion detection is determined from a

2   comparison of images on a photosensor.

1   75.   (New) The method of claim 73, wherein the motion detection is determined from a

2   comparison of an image on a pixel of a photosensor.

1   76.   (New) The method of claim 69, wherein the wireless device comprises one from a

2   group consisting of a mobile phone, a text messager, and a personal digital assistant.